

# Manual of Aesthetic Design Practice



Ministry of Transportation





## Introduction

# Introduction

The Ministry of Transportation and Highways recognizes that the building of roads encompasses the efforts of a number of disciplines, each contributing to the quality and character of the finished product. An important aspect of this work includes the area of highway aesthetics.

The Province of British Columbia offers some of the most beautiful and spectacular terrain anywhere in the world. It also provides uncommon challenges and opportunities for highway construction; both for new highways that continue to open up vast undeveloped areas of the province, and for existing roads that require upgrading to meet the demands of a growing population.

This Manual of Aesthetic Design Practice addresses the design issues that affect the beauty and appeal of a highway corridor and contribute to the "complete highway" picture. By incorporating aesthetic design practices at all stages of highway development, from inception through to construction, we are able to take advantage of the landscapes that surround us and to deliver highways that have intrinsic values that complement, rather than intrude into the environment.

The application of the principles presented in this manual does not necessarily mean more cost to the public. To the contrary, there are distinct opportunities to not only refine certain design practices at no additional expense, but to realize returns from potentials such as increased tourism, and reduced maintenance



Figure A-1  
Most highways in British Columbia are built through areas of spectacular scenery. Highways which do not respond to this aesthetic context are a lost opportunity.

requirements. In addition, the inclusion of aesthetic considerations into the overall project management of highways provides for greater design cost efficiency by integrating aesthetics with the basic engineering works, rather than treating them as expensive add-on solutions at a later date.

Many aesthetically oriented concepts stimulate the driver's senses and awareness of the surroundings, contributing to driver alertness and safety. Such observations are difficult to quantify, but there can be no doubt that people are influenced by such things as beauty, monotony, ugliness, and stress. Visual factors are the main determinant of aesthetic response, and also the element most readily controlled by highway designers.

British Columbia's reputation as a desirable place to live and visit is in large measure due to its scenic beauty, much of which can be appreciated from its highways. Beautiful highways can be part of this attraction. Boring and unappealing highways at best would be a lost opportunity.



Figure A-2  
Highways should strive to contribute positively to this aesthetic quality.



# Examples of Aesthetic Design in Practice

## Earthworks



Figure A-3  
This pragmatic solution to controlling stormwater runoff is aesthetically unacceptable.



Figure A-4  
This culvert outflow has been constructed to create an effective and well concealed transition between the pipe and stream.



Figure A-5  
In this example earthworks have been designed to minimize headlight glare and simulate adjacent topography.

## Revegetation



Figure A-6  
All areas within the highway right of way must be designed and maintained to create an attractive and orderly image. This area between a highway and frontage road looks unfinished and invites abuse through littering and off-road traffic.



Figure A-7  
The treatment of roadsides and medians should be simple and responsive to the character of the adjacent topography.



Figure A-8  
In this example existing vegetation has been retained within the median reducing revegetation costs and maintaining visual continuity with the adjacent countryside.





# How to Use This Manual

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The Manual of Aesthetic Design Practice is intended for use by all Highways personnel and consultants involved with the planning, design, or construction management of highways in British Columbia. To be effective the practices outlined in this manual must be supported at all levels of decision making and be incorporated throughout the design process, from project inception to construction.

The Manual is organized into sections which follow the general sequence of activities and/or tendering in a typical highway design project. Sections include:

- Introduction
- Aesthetic Design Method
- Aesthetic Classification System
- Visual Resource Management
- Alignment
- Clearing and Grubbing - Vegetation Management
- Earthwork
- Revegetation - Vegetation Management
- Structures
- Roadside Facilities
- Above Ground Utilities

The recommended approach for users of the Manual is as follows:

Read through and be familiar with the Introduction, the Aesthetic Design Method, and the Aesthetic Classification System.

Review the balance of the manual to become familiar with the scope and general intent of the document. From this overview it will be possible to focus on the Section(s) which apply to your most immediate concerns without losing sight of the overall context. Cross references to other sections are indicated in italics. These references indicate where you should be aware of a related point under another chapter.

It is important to be aware that the success of this design approach is dependent upon the coordinated efforts of all those involved with a project. Effective aesthetic solutions can only be achieved through a coordinated integration of all aspects of a highway design. Such an integrated solution will require designers of various aspects of the highway to develop ideas concurrently and co-operatively.

The Manual of Aesthetic Design Practice is written to apply to rural highways through virgin territory. This has been done for the sake of clarity and simplicity. Many, but not all, of the principles introduced herein will apply to highway improvement projects and to suburban highways.

This manual is written to deal with the fundamentals of good design which will be universally applicable. It is outside of the scope of this manual to address issues related to specific or unique site conditions. For more information relating to specific developments please refer to the Ministry's Landscape Policy which defines 'Rural', 'Suburban', and 'Urban' landscape conditions and outlines Ministry Landscape Standards, many of which deal with landscape matters at the level of detail design.

For additional information contact the appropriate Roadside Development Office, or the Roadside Development Section of Highway Engineering in Victoria.

## Aesthetic Design Method

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The following flowchart illustrates and summarizes the sequence of highway design and identifies specific activities involved in incorporating aesthetic design principles at each stage of highway development.

The stages identified across the top of the chart correspond with the successive levels of design from project identification through to the design and development of roadway structures, roadside facilities, and above ground utilities.

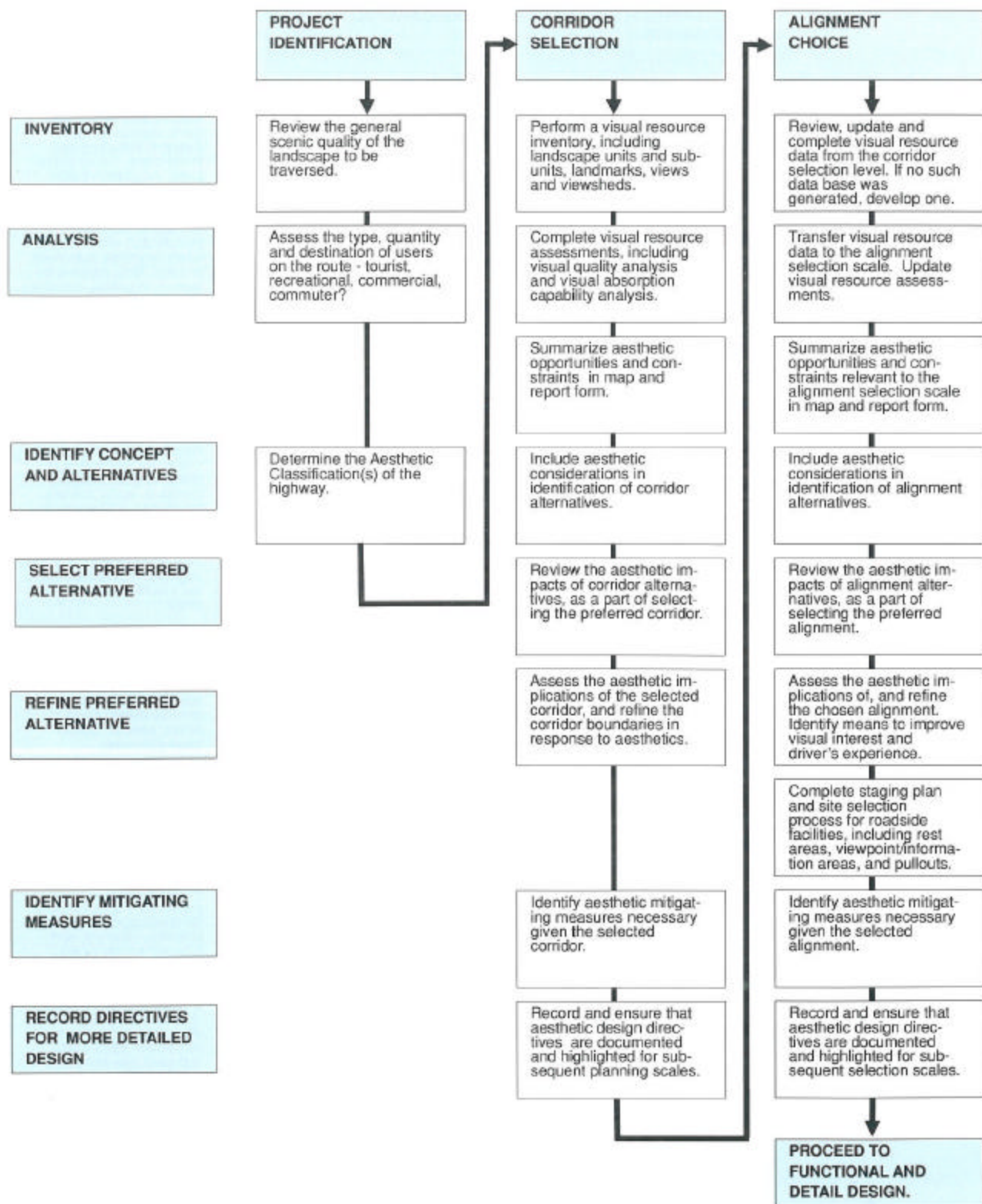
The divisions along the left side identify tasks that must be completed for each successive level of design refinement.

Designers involved in highway development projects will be able to use this flowchart to locate their specific involvement within the context of the aesthetic design methodology and refer directly to the parts of this manual which refer to their particular needs.

This flowchart provides a graphic summary of the contents of this manual. It offers a useful reference as an initial overview of the complete aesthetic design process, as well as a map locating individual tasks within the context of the overall process.

# Aesthetic Design Method

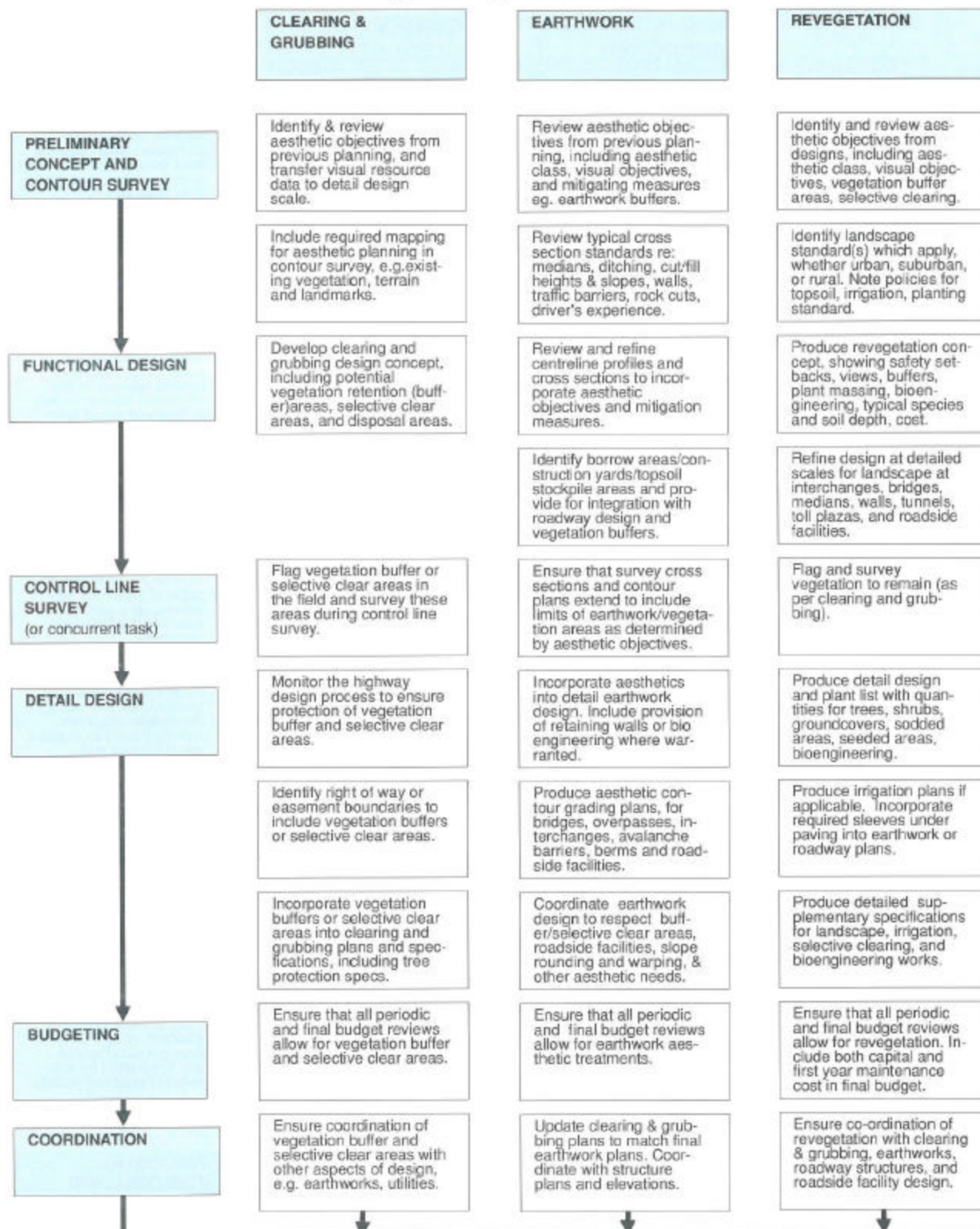
## Preliminary Engineering Stage





# Aesthetic Design Method

## Functional and Detail Design Stage





### ROADWAY STRUCTURES

Identify and review aesthetic objectives for previous designs, including aesthetic class, view-points, recreation amenities and structures.

Identify related structures which might be incorporated into an integrated design e.g. bridges & approach walls. Extend survey at structure sites.

Produce detailed site plans and grading plans at structures to integrate the structure into the adjacent terrain and vegetation.

Produce design elevation drawings of structures, showing relationships to adjacent grades, vegetation, and scale in relation to the structure site.

Complete a design refinement process including review(s) by professionals trained in aesthetics.

Ensure design aesthetics are implemented during detail and structural design.

Select construction finish materials to meet the colour and texture objectives set out by the aesthetic class of the highway.

Concentrate design effort on visual vertical details of the structure, e.g. wall faces, handrails, traffic barriers, lighting.

Ensure that all periodic and final budget reviews allow for structure aesthetic treatments.

Ensure co-ordination of earthworks, drainage and erosion control, and revegetation with structure design.

### ROADSIDE FACILITIES

Review aesthetic objectives, including aesthetic class, Provincial Roadside Facility Program, roadside facility staging and site selection plans.

Ensure that contour survey includes proposed or potential roadside facility areas. Detailed contour interval should be provided.

Produce and refine site plan concept, including conceptual access road/parking layout, grading, building siting and walkways, related costs.

Field review site plan concept, and refine accordingly. Finalize approvals for utility supply and road access.

Produce detail design of access road and parking, including geometrics, profiles, integration with adjacent grades/vegetation.

Complete overall site plan, grading plan, and revegetation plan. Refine access road and parking design as necessary for co-ordination.

Produce architectural plans and details for buildings on the site. Produce utility plans and profiles. Coordinate with site/landscape plans.

Finalize working drawings and supplementary specs for layout, grading, planting, irrigation, clearing and grubbing.

Ensure that all periodic and final budget reviews allow for roadside facility development.

Ensure co-ordination of roadside facility location and access roads with overall highway spacing, laning, profiles and earthwork plans.

### ABOVE GROUND UTILITIES

Identify and review aesthetic objectives from previous designs, including aesthetic class, existing and planned utilities, routing and screening policy.

Ensure that locations of all existing or planned above ground utilities within view of the road are included in contour survey.

Coordinate with utility companies or municipalities to maximize shared poles and minimize above ground clutter of utilities.

Determine routing of utility lines, with aesthetic class and views in mind. Identify route locations requiring buffering.

Ensure that control line survey and cross sections include routings for visible utilities.

Coordinate detail design of utilities to meet aesthetic objectives. Include aesthetic considerations in lighting plans.

Review in detail kiosks, pylons, gooseneck vents, or other utilitarian structures to minimize aesthetic impacts by location or design.

Review all utility routings to ensure that areas of existing vegetation to remain, or significant views are not impacted. Refine accordingly.

Ensure that all periodic and final budget reviews allow for aesthetic treatment of above-ground utilities.

Ensure co-ordination of above ground utilities with clearing & grubbing, earthwork, revegetation, roadway structure and roadside facility plans.

**PROCEED TO  
TENDER CALL AND  
CONSTRUCTION**